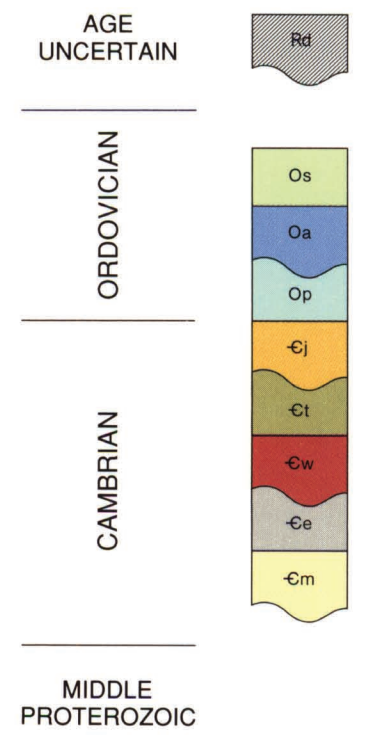


CORRELATION OF UNITS



Approximate age of unit (in million years)



DEPTH TO BEDROCK



Generally good to excellent outcrop, particularly on hillsides, roadcuts, and in river valleys. Only mineral exploration borings and deep municipal wells penetrate bedrock.

Outcrop can occur only in deep river valleys and bedrock highs. Only mineral exploration borings and deep municipal wells penetrate bedrock.

Poor to no outcrop. Outcrop may occur in isolated exposures, particularly in river valleys and bedrock highs. Shallow water wells commonly penetrate bedrock.

DESCRIPTION OF MAP UNITS

Rd Rocks of the Rock Elm disturbance. Sandstone breccia, sandstone, and shale of uncertain age (post-Prairie du Chien Group).

Os **Sinipsee Group, Plattville Formation.** Dolomite, light brown to buff, thin- to medium-bedded; preserved thickness of 4 to 6 m on hills in extreme western area.

Oa **Ancestral Group, St. Peter Formation.** Sandstone, quartzite, white to pale yellow, fine to medium grained; rounded, moderately sorted; thickness varies from 20 m to less than 5 m because of unconformable lower contact.

Op **Prairie du Chien Group.** Dolomite and sandy dolomite. Consists of 3 recognizable units from top to bottom: **Shakopee Formation**, **Willow River Member**, dolomite, gray to brown, medium grained, and thin-bedded; 15 to 20 m thick; **Shakopee Formation**, **New Richmond Member**-dolomite sandstone and siltstone, gray to brown, fine grained, lenticle-bedded; contains coarse, rounded, and frosted quartz grains; 3 to 5 m thick; **Oreola Formation**-dolomite, crystalline, gray to brown, thick-bedded with abundant nodular and bedded chert, 30 m thick.

Cj **Trempealeau Group, Jordan and St. Lawrence Formations.** Sandstone, sandy dolomite, dolomite, and siltstone. Consists of four recognizable units from top to bottom: **Jordan Formation**, **Coon Valley Member**, yellow to brown, sandy dolomite, 5 to 8 m thick; **Jordan Formation**, **Van Osse Member**-sandstone, quartzite, white to orange-brown, medium grained, poorly sorted; 10 m thick; **Jordan Formation**, **Norman Member**-sandstone, quartzite, white to yellow, fine grained, rounded, moderately sorted, medium-bedded; 10 to 20 m thick; **St. Lawrence Formation**, **Lodi Member**-siltstone, dolomite siltstone, and very fine-grained dolomite, light brown to buff; 4 to 4 m thick.

Ct **Tunnel City Group.** Sandstone and glauconitic sandstone, total thickness 20 to 30 m. Consists of five recognizable interbedded sandstone units. **Mazomanie Formation**, lithology 1-sandstone, quartzite, yellow to white, fine grained, well-sorted; glauconite less than 5 percent; **Mazomanie Formation**, lithology 2-sandstone, quartzite, micaceous, light gray to yellow, fine to very fine grained,

thin-bedded. **Lone Rock Formation**, **Reno Member**-sandstone, quartzite, glauconitic, fine to very fine grained; **Lone Rock Formation**, **Tonah Member**-sandstone, quartzite, micaceous, light gray to yellow, very fine grained, thin-bedded with gray-green shaly and silty partings. **Lone Rock Formation**, **Birkmore Member**-sandstone, quartzite, glauconitic, fine grained; commonly burrowed and containing intraformational conglomerate.

Cw **Worewoc Formation.** Sandstone, total thickness 10 to 25 m. Consists of two recognizable units from top to bottom: **Ironton Member**-sandstone, quartzite, white to brown, medium to coarse grained, subrounded, poorly sorted, wavy 0.5 to 1 m bedding, commonly localized. **Galesville Member**-sandstone, quartzite, white, fine to medium grained, rounded to subrounded grains, well-sorted; thick-bedded, individual beds range up to 2 m, commonly cross-bedded, friable.

Ca **Eau Claire Formation.** Sandstone, fine grained, light brown to buff, locally glauconitic, poorly sorted, subangular; locally abundant triradiate and phosphatic brachiopod fossils; commonly flaggy bedded with green shale partings, but can contain thick (2-3 m) beds; locally contains green shale beds up to 1 m thick; 1 to 40 m thick.

Rd **Dabase dike** probably of Keweenaw age. Inferred from aeromagnetic data and limited outcrops.

Cm **Mount Simon Formation.** Sandstone, pebble conglomerate, and shale, coarse to fine grained, gray to light brown to white, poorly sorted, thin- to thick-bedded, pebbly beds most common near base; locally feldspathic; abundant 10 to 20 cm thick red and green shale beds in lower part; upper beds commonly subrounded and fossiliferous (phosphatic brachiopods); total thickness reaches 70 m in far west.

Pq **Orthoquartzite and conglomerate.** Quartzite, commonly red to pink but may be locally green, white, gray, or yellow, locally cross-bedded; pebble conglomerate is commonly interbedded and consists of quartz pebbles and rock fragments in quartzite matrix.

Eba **Argillite and micaceous quartzite.** Argillite or slate typically associated with chert and iron-rich rock (Pbc); micaceous quartzite commonly contains felsic volcanic clasts and quartz pebbles.

Pbc **Chert and iron formation.** Principally chemical sediment consisting of pink and gray to black argillite chert, ferruginous chert, and banded hematite and pyritic iron formation.

Prg **Biotite granite.** Pink to red, massive, typically granophytic texture; also includes two-mica equigranular granite.

Pv **Rhyolite.** Red to gray, massive to banded; includes fine-grained porphyritic or aphanitic banded flow units and pyroclastic units; pyroclastic rock contains lapilli to bomb-size rhyolite clasts.

Pgr **Biotite granite.** Red to pink adamellite and granodiorite, typically equigranular to porphyritic, foliated to massive; unit includes several textural varieties representing intrusive suites ranging from 1830 Ma to 1860 Ma.

Pmg **Mafic intrusive rocks.** Includes gabbro, minor pyroxenite and anorthosite, mineralogy, texture, and degree of deformation are variable.

Rdi **Hornblende diorite.** Occurs in small scattered plutons; composition ranges from diorite to tonalite and gabbro; medium to coarse grained; foliated to massive.

Pgd **Granodiorite and tonalite.** Coarse-grained equigranular to porphyritic rocks with abundant biotite and hornblende, typically well foliated.

Pfv **Undivided felsic to intermediate metavolcanic rock.** Includes pyroclastic rock, porphyritic flows, and interbedded volcanogenic metasedimentary rock (quartz-sericite schistophyllite, biotite-chlorite schist).

Pmv **Mafic to intermediate volcanic rock.** Predominantly hornblende and actinolite schist with pillow structures and diabase texture locally preserved.

Avr **Undivided mafic to felsic metavolcanic rock.** Originally flows, volcaniclastic rock, and diabase; includes chlorite-actinolite and hornblende schist, amphibolite at higher metamorphic grade; volcaniclastic texture, amygdaloidal texture, and pillow structures are rarely preserved.

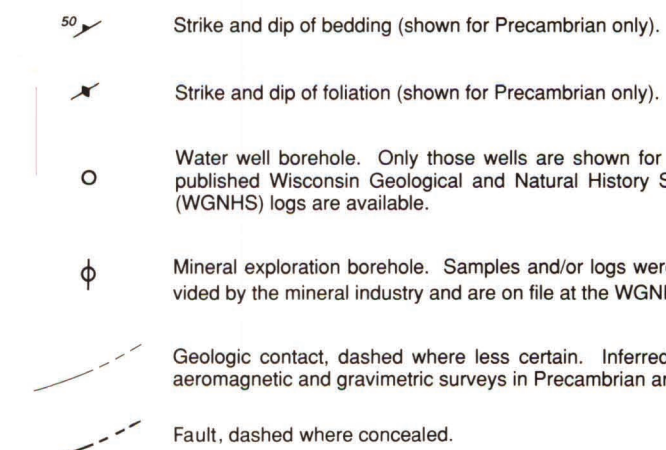
Agg **Banded felsic-intermediate gneiss and amphibolite.** Probably derived from volcanic, sedimentary, and igneous protoliths of uncertain age.

Avs **Interlayered quartzofeldspathic schist and amphibolite.** Probably of volcanogenic and sedimentary origin; associated with iron formation (Afr) in the lower Black River Valley.

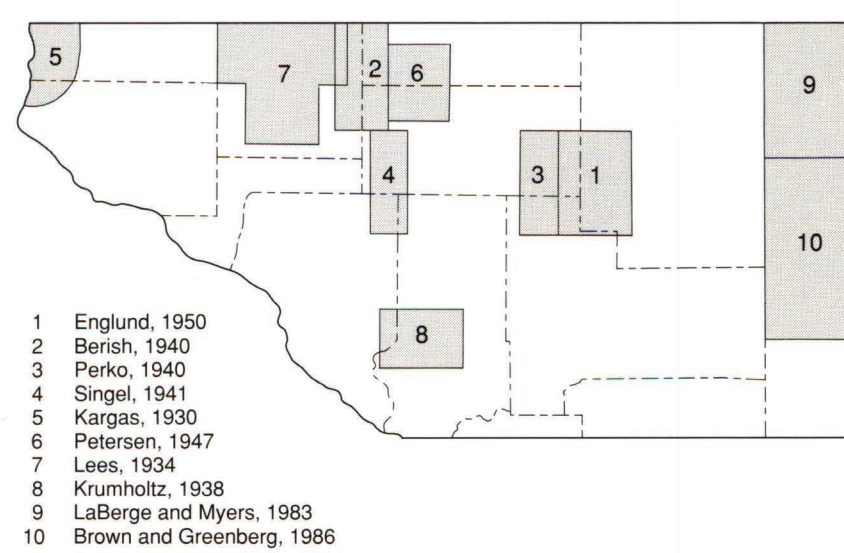
Ajl **Banded quartz-magnetite iron formation.** Associated with talc schist, quartzofeldspathic schist, and minor garnet-bearing amphibolite.

Agm **Quartzofeldspathic gneiss and migmatite.** Well layered/banded; granitic to tonalite composition, with subordinate amphibolite and biotite schist; intruded by Prg, Pbc, and several generations of granitic dikes.

MAP SYMBOLS



PREVIOUS GEOLOGIC MAPPING



SOURCES OF INFORMATION

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ADDITIONAL SOURCES OF INFORMATION

- This map was produced by reconnaissance geologic mapping at a scale of 1:250,000. Much use was made of unpublished field notes and maps of P.E. Myers, H. Kramiec, and T.T. Thwaites.
- most geologic survey records;
- water well records, well construction reports, and geologic logs;
- mineral exploration records;
- unpublished field notes and maps of P.E. Myers, H. Kramiec, and T.T. Thwaites.